



# Kentucky Climate Change & Air Quality Conference



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April 14, 2010



# The Big Deal with Air Quality...

❖ Health

❖ Quality of Life

❖ Economics





# The Clean Air Framework

## ❖ EPA sets National Ambient Air Quality Standards (NAAQS) for pollutants harmful to public health & environment

- Ozone
- Particulate matter
- Lead
- Carbon monoxide
- Nitrogen Dioxide
- Sulfur Dioxide



## ❖ EPA must review NAAQS every 5 years after advice from Clean Air Science Advisory Committee



# Primary vs. Secondary

- ❖ Primary: Health-based at level judge to be “requisite to protect public health with an adequate margin of safety.”
- ❖ Secondary: “requisite” to protect public welfare from “any known or anticipated adverse effects associated with the pollutants in ambient air” including effects on vegetations, soils, water, wildlife, buildings, national monuments and visibility.



# Glossary

- ❖ Attainment - area that is in compliance with the NAAQS.
- ❖ Nonattainment – area that is out of compliance with the NAAQS.
  - = area that has violating monitor or that contributes to an area with a violating monitor.
- ❖ Unclassifiable – area that has incomplete data or monitoring data issues.



# Considerations for NAAQS

- ❖ **Setting NAAQS:** scientific information on health and/or environmental effects (not cost)
- ❖ **Achieving NAAQS:** account for cost, technical feasibility, time needed to attain

<http://www.epa.gov/ttn/naaqs/>

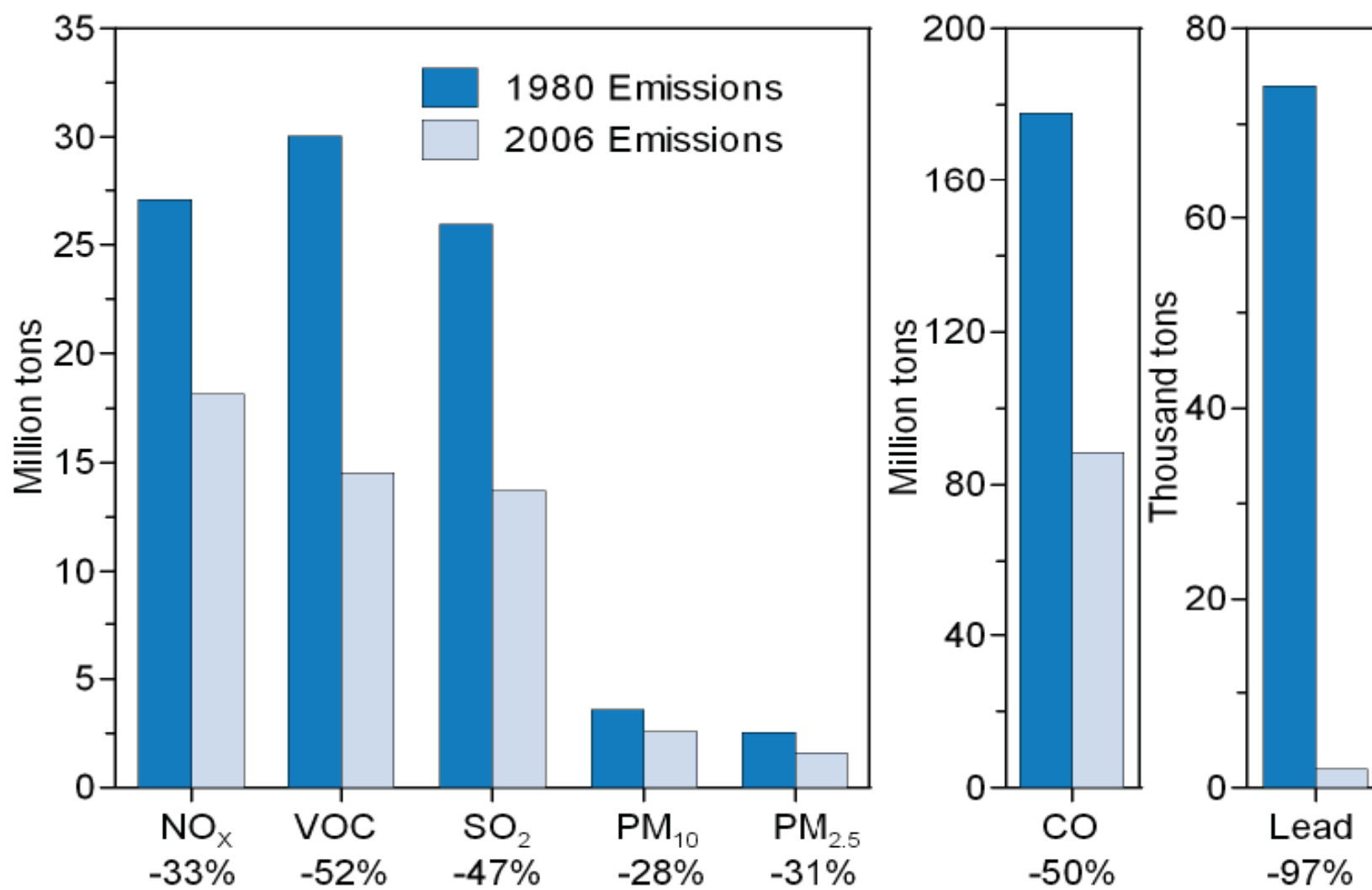


# Current NAAQS

Pollutant	Primary Standards	Secondary Standards
PM <sub>10</sub> PM <sub>2.5</sub>	150 µg/m <sup>3</sup> (24 hr) 15 µg/m <sup>3</sup> (annual) 35 µg/m <sup>3</sup> (24 hr)	Same as primary
Ozone	0.08 ppm (8 hr) (1997 - current) 0.075 ppm (8 hr) (2008)	Same as primary
Lead	0.15µg/m <sup>3</sup> (3 month average) (2008)	Same as primary
Carbon monoxide	9 ppm or 10 mg/m <sup>3</sup> (1 hr) 35 ppm or 40 mg/m <sup>3</sup> (8 hr)	None
Nitrogen dioxide	53 ppb (annual) 100 ppb (1-hour)	Same as primary
Sulfur dioxide	0.03 ppm (annual) 0.14 ppm (24 hr)	0.5 ppm (3 hr)



# Comparison of National Annual Emissions, 1980 vs. 2006







# Health Impacts for NAAQS

- ❖ **Lead** - Can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems & the cardiovascular system.
- ❖ **PM<sub>2.5</sub>** - Small particles less than 10 micrometers in diameter pose the greatest problems, because they can get deep into lungs & some may even get into the bloodstream affecting lungs & heart health.
- ❖ **NO<sub>2</sub>** - Current scientific evidence links short-term exposures, ranging from 30 min. to 24 hrs, with adverse respiratory effects including airway inflammation in healthy people & increased respiratory symptoms in people with asthma.
- ❖ **SO<sub>2</sub>** - Current scientific evidence links short-term exposures ranging from 5 min. to 24 hrs, with an array of adverse respiratory effects including bronchoconstriction & increased asthma symptoms.





# Sources of Pollution

Wood-Burning Stoves



Power Plants



Heavy Duty Diesel Engines



Natural Sources



**Multiple  
Sources of  
Pollution**

Cars and Trucks



Non-Road Vehicles



Forest Fires

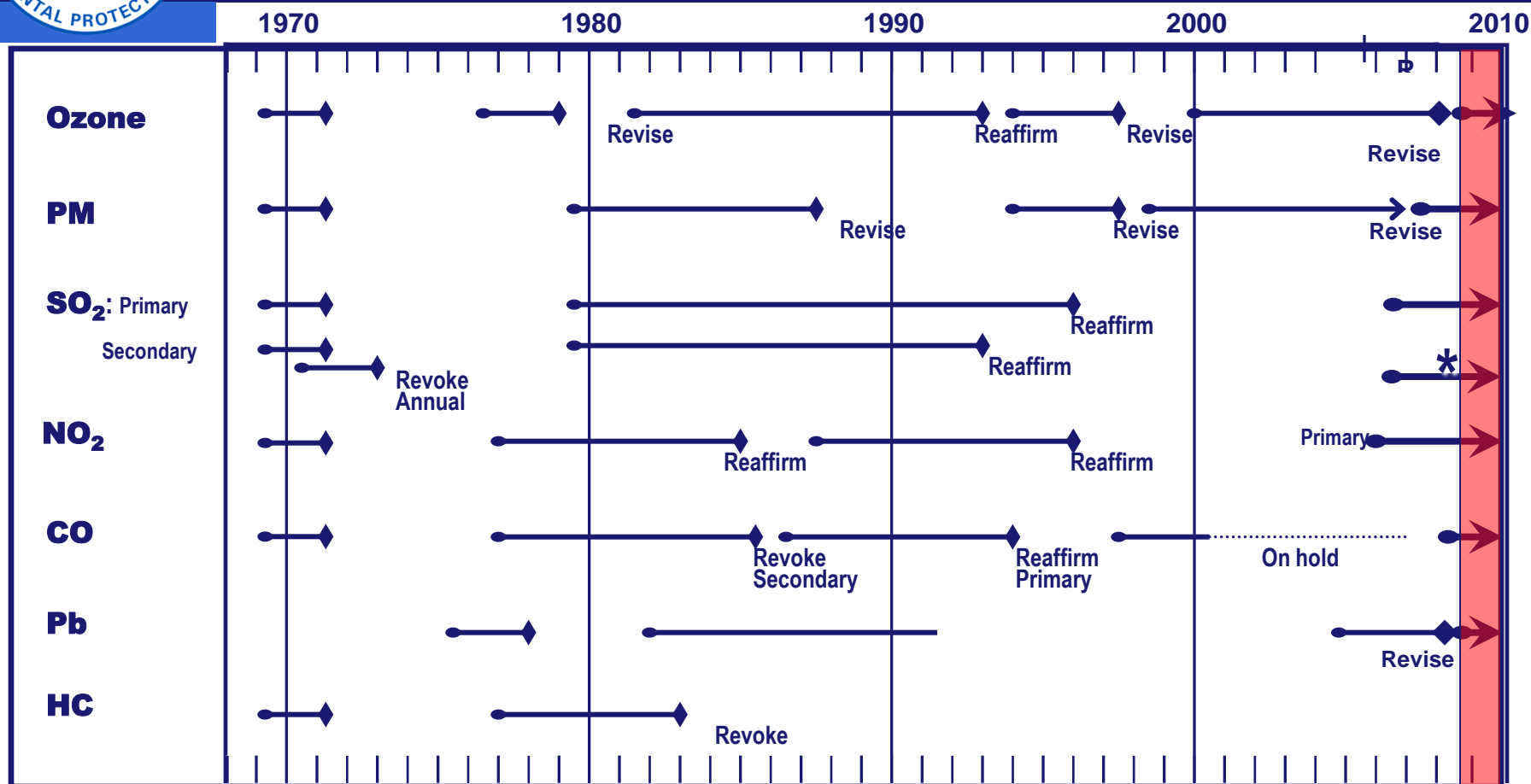


Industrial Sources





# Timeline: Past and Current NAAQS Reviews



\* Joint NO<sub>x</sub>/SO<sub>x</sub> secondary NAAQS review – 2006-2010



# NAAQS Review Schedule Proposed and Final Rules as of April 2010

MILESTONE	POLLUTANT						
	Ozone <sup>1</sup>	Lead	NO <sub>2</sub> Primary	SO <sub>2</sub> Primary	NO <sub>2</sub> /SO <sub>2</sub> Secondary	CO	PM
NPR	<u>June 20, 2007</u> <u>December 21, 2009<sup>1</sup></u>	<u>May 5, 2008</u>	Jul 15, 2009	Nov 16, 2009	<u>Feb 12, 2010</u>	<u>Oct 28, 2010</u>	Nov 2010
NFR	<u>Mar 12, 2008</u> <u>August 31, 2010<sup>1</sup></u>	<u>Oct 15, 2008</u>	Jan 22, 2010	<u>Jun 2, 2010</u>	<u>Oct 19, 2010</u>	<u>May 13, 2011</u>	July 2011

Note: Underlined dates indicate court-ordered or settlement agreement deadlines – for NO<sub>2</sub> and SO<sub>2</sub> Secondary NAAQS reviews, the final dates listed above have been agreed to by the plaintiffs but have not yet been officially entered by the court.

<sup>1</sup> On September 16, 2009, EPA announced reconsideration of the 2008 8-hour Ozone standard. The reconsideration calls for an accelerated designation schedule for a new standard. On January 6, 2010, EPA signed and on January 19, 2010, EPA proposed a reconsidered primary and secondary standard.



# NAAQS Update – Lead

## ❖ 2008 Lead Standard ( $0.15 \mu\text{g}/\text{m}^3$ )

- All Kentucky areas indicate attaining data with 2007-2009 data

## ❖ Staggered designations

- Initial round – by October 15, 2010 for nonattainment only.
- Second round – by October 15, 2011 for additional nonattainment areas, but also unclassifiable and unclassifiable/attainment.



# NAAQS Update – PM<sub>2.5</sub>

## ❖ 2006 24-Hour Standard (35 µg/m<sup>3</sup>)

- All Kentucky areas attainment

## ❖ 1997 Annual Standard (15 µg/m<sup>3</sup>)

- Three areas designated nonattainment in 2005
  - Louisville
  - Northern Kentucky
  - Ashland



# NAAQS Update – NO<sub>2</sub>

- ❖ January 22, 2010 (effective April 12, 2010) – Primary NO<sub>2</sub> NAAQS strengthened.
  - Secondary standard under separate review consideration.
- ❖ New 1-hour standard at 100 parts per billion (ppb)
- ❖ Retained annual standard at 53 ppb.





# NAAQS Update – SO<sub>2</sub>

## ❖ 1971 NAAQS

- 24-hr standard – 140 ppb
- Annual standard – 30 ppb

## ❖ November 2009 – EPA proposed to strengthen NAAQS.

- Replace 24-hr & annual standard with new 1-hr standard.
- Set a range between 50 & 100 ppb

## ❖ Expect final rule June 2, 2010





# Typical Implementation Schedule

- ❖ 1 year after final NAAQS – State/tribal recommendations.
- ❖ 2 years after final NAAQS – EPA designations (staggered for 2008 lead though)
- ❖ 3 years after designations – air quality plan due to outline attainment strategy.
- ❖ 5 years after designations – expect all areas to attain standard.

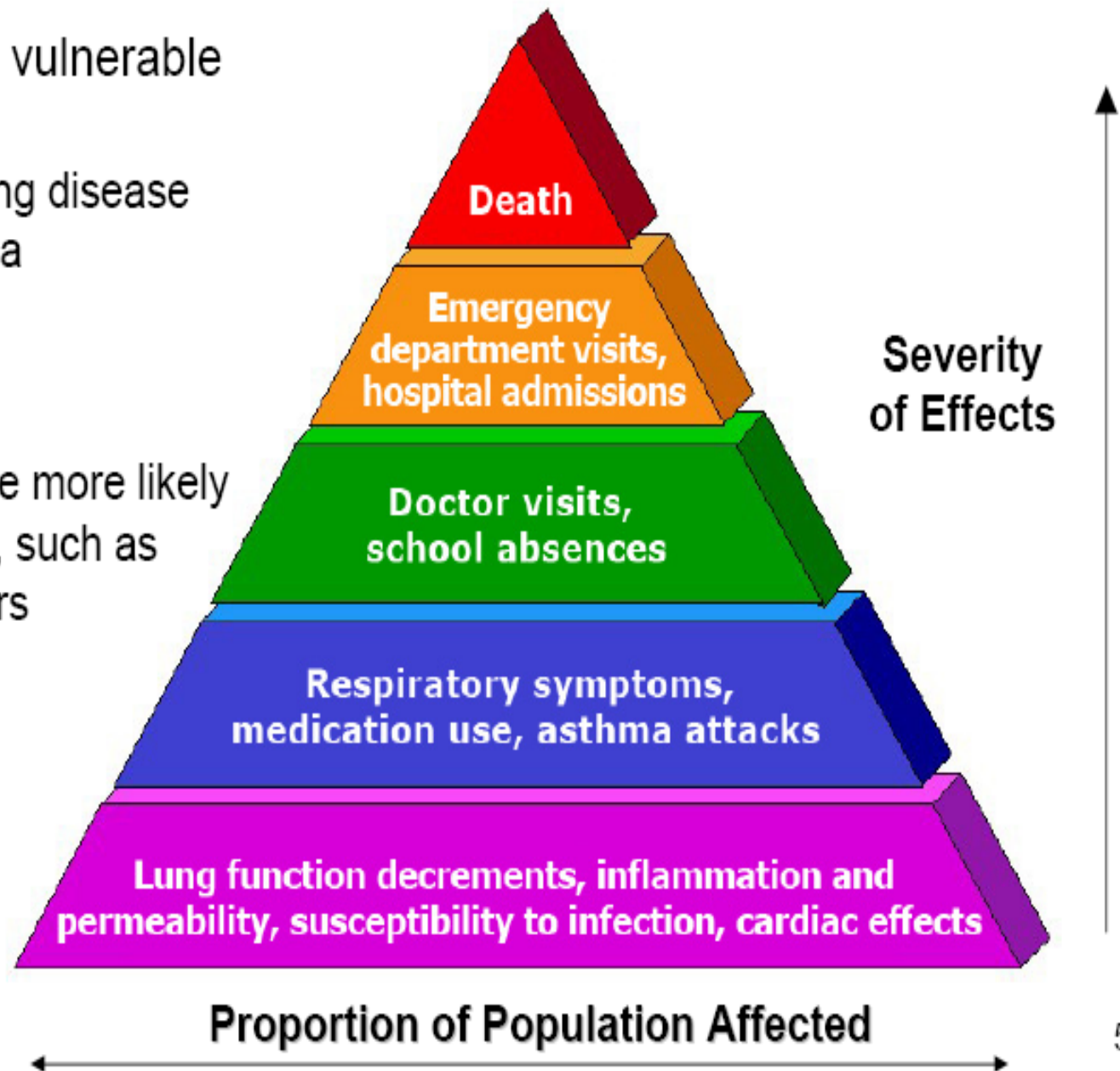


# NAAQS Update - Ozone

- ❖ 3/12/08 – EPA Revised Ozone primary & secondary standards
  - Lowered both standards from 0.08 ppm to 0.075 ppm
- ❖ 9/16/09 - EPA Administrator announced reconsideration of 0.075 ppm standards.
- ❖ 1/6/10 - EPA signed proposed reconsidered **primary & secondary** standards (published on 1/19/10)

# Ozone Health Impacts: “Pyramid of Effects”

- Susceptible and vulnerable groups include:
  - People with lung disease such as asthma
  - Children
  - Older adults
  - People who are more likely to be exposed, such as outdoor workers





# 2010 Reconsidered 8-Hour Ozone Standards

- ❖ Primary – a level within range of 0.060 ppm to 0.070 ppm (3<sup>rd</sup> decimal place no rounding)
- ❖ Secondary – W126 cumulative seasonal standard – a level within range of 7 to 15 ppm-hours
- ❖ 60 day comment period ended 3/22/10
- ❖ 8/31/10 - Final standard expected to be signed
- ❖ <http://www.epa.gov/ozonedesignations/>



# NAAQS Update - Ozone

## ❖ Accelerated Designation Process

- EPA has 1 year from promulgation of final standard to complete designation process
- States have 4 months from promulgation of final standards to make designation recommendations to EPA
- EPA Administrator can modify the state designations recommendation
  - Administrator notifies state no later than 120 days before designation
  - Gives state opportunity to provide additional information





# Timeline for Ozone Designation Process

Milestones	2008 8-Hour Ozone NAAQS Dates
Final decision on level of NAAQS changed to ???? ppm	August 31, 2010
State/Tribal Recommendations Due	January 7, 2011
EPA Response	No later than March 11, 2011 (120 day consultation period)
State and Tribes provide additional information	Prior to final designations
Final Designations	No later than August 31, 2011



# Long Range Next Steps...

- ❖ Designations (will include '08-'10 data)
- ❖ Nonattainment new source review (Applies on the effective date of designations – 8/31/11)
- ❖ Transportation conformity (Applies 1 year after the effective date of designations – 8/31/12)
- ❖ Development of Attainment Plans (Due 2 years after designation – 8/31/13)



# Nine Factors...

- ❖ Air quality data
- ❖ Emissions data (location of sources and contribution to ozone concentrations)
- ❖ Population density and degree of urbanization (including commercial development)
- ❖ Traffic and commuting patterns
- ❖ Growth rates and patterns
- ❖ Meteorology
- ❖ Geography/topography
- ❖ Jurisdictional boundaries
- ❖ Level of control of emission sources







# How Do We Get it Done?

## Ozone Outreach Strategy

**“We need each other!”**

### ❖ Pre-designation

- Voluntary reductions
- Educating the public
- Strategizing on best way to meet requirements if area is nonattainment

### ❖ Post-designation

- Attainment!
  - Continue efforts to reduce emissions
  - Keep up efforts to educate the public
- Nonattainment
  - Work in partnership to implement transportation conformity requirements
  - Support the state with State Implementation Plan efforts to improve air quality.



# NAAQS Designation Contacts

- ❖ Ozone – Jane Spann; (404) 562-9029;  
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- ❖ PM – Joel Huey; (404) 562-9104;  
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- ❖ Lead, SO<sub>2</sub>, NO<sub>2</sub> & CO – Steve Scofield;  
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# Questions?

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**<http://www.epa.gov/region4/>**